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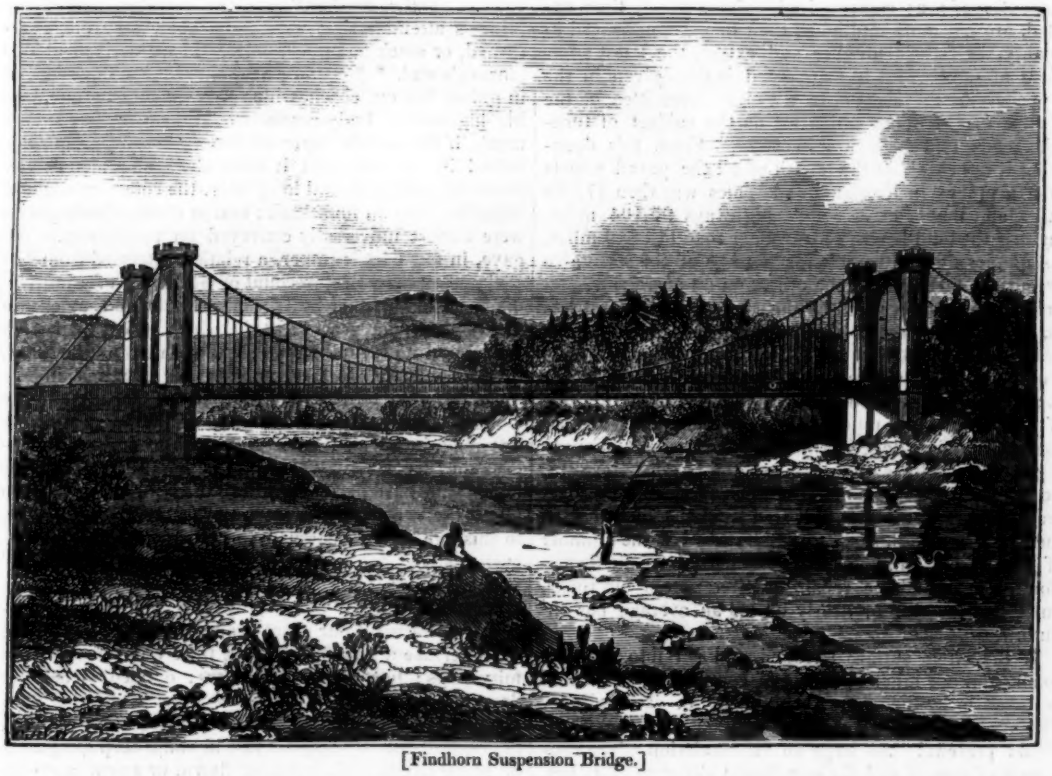
THE GREAT NORTH ROAD.



[Findhorn Suspension Bridge.]

Our island, it is true, still "stands where it did" a century ago; but in almost all other respects it is as much changed since then as an old house that had been almost wholly rebuilt. All our accommodations within "this little world" are metamorphosed since the days of our fathers and grandfathers. Turn to which side we may, where shall we find things in anything like the same state in which they were even sixty years since? All commodities consumed, it may almost be said without exception by all classes of the people, are of improved manufacture and better quality. Look to the clothing that is now worn, by men and women, even of the poorest order of our population; nearly every article of it is of a quality such as formerly was not generally used even by the most opulent. The same thing is true of their food. Throughout England, at least, inferior substitutes for bread made of wheaten flour are now nearly everywhere discarded;—the people will live upon nothing, or at least will take nothing for the main basis of their subsistence, except that best and costliest of all the generally cultivated productions of the earth. Other articles of consumption, again, such as tea, for example, and sugar, have, from being the luxuries of the few, become almost universal necessaries. The houses inhabited by persons of every degree are equally changed and improved. So is every article of furniture, everything intended either for use or for ornament, which they contain. It would be an endless task to attempt to enumerate the many things which but a generation ago were rare, and are now possessed, in greater or smaller measure, almost by every body; the many other things that were then hardly ever seen, and are now common and plentiful everywhere; and the many others still that absolutely did not exist then, and are now enjoyed either by the whole community or by a large portion of it.

But that which lies at the root and beginning of all these things, and is indeed the foundation of a country's civilization, is a system of good roads. Without this the national resources and energies remain, in nearly their sum total, unawakened and useless. Roads are the veins and arteries by means of which the circulation of the social body is carried on. Where they do not exist, there can hardly be said to be a community. The people have nothing in common. They are not one people in anything but the name. No commerce, nor intercourse of any kind, mixes them up together into one mass. The inhabitants of a country entirely without roads would, of necessity, be savages.

No country on the face of the earth is so well provided with roads as our own; and that is one of the chief of the causes which place this country, beyond all rational dispute, at the head of the civilization of the world. The greater part of England is now intersected in all

directions, not only by paths by which persons may pass on foot from one place to another, but by broad highways for the movement of wheel-carriages, and the transference of the heaviest loads that can be dragged by the power of horses or of machinery. Formerly vehicles drawn along the public roads were not allowed to carry above a very small weight. In 1629, Charles I. issued a proclamation commanding that no common carrier, or other person whatsoever, should travel with any wain, cart, or carriage, with more than two wheels, nor with a load of above twenty hundredweight, for fear of injuring the roads; and penalties continued to be exacted under this regulation for many years after. Our present roads, as compared with those which then existed, are not more multiplied than they are improved in quality. Of their number and extent, the latest complete account which has appeared is that given in the Appendix to the Report of a Select Committee of the House of Commons which sat on the subject of turnpike-roads and highways in 1820. From this document it appears that the length of all the paved streets and turnpikes in England and Wales was then 17,725 miles, and that of other public highways 95,104 miles, making the total length of travelling road 114,829 miles. Assuming all the turnpike-roads to be of the statutable breadth of 60 feet, and the others on an average 30 feet broad, the space covered by the whole would be not less than 482,000 acres, or about 752 square miles. In the years 1812, 1813, and 1814, (the latest for which there are any returns,) this extent of road was kept in repair at an annual expense of £1,404,842, being at the rate of £12 6*s.* 8*d.* per mile. But notwithstanding all that has already been done in this way, the business of opening additional lines of road is constantly going forward. Some idea of the rate at which this species of improvement proceeds may be gathered from the fact, that in the six years from 1827 to 1832 inclusive, the number of acts of parliament which were passed for the formation of new, and the repair or alteration of old roads, amounted to 388, or nearly 65 on an average per annum.

If the whole surface streaked and cut into by these roads, and our other channels of communication, could be taken in by the eye at once, what an extraordinary display of national enterprise and national wealth it would present! So large an accumulation of the conquests of energy and the constituent elements of riches, it may be safely said, was never before collected within the same compass. These roads are often the noblest exemplifications of art subjugating and triumphing over the opposition of natural difficulties. Many of them are carried through the air over considerable rivers by bridges of more or less cost and magnificence. Others are supported across depths and hollows on stupendous embankments. Some are driven underground through mountains. Some terminate in piers that extend far into the sea. There is no hostile force that their daring engineers have not faced and vanquished. And then to our common highways are to be added our rail-roads, and canals, and rivers made navigable, or otherwise improved by art, as all entering into the aggregate of those channels of communication which our ancestors and ourselves have created, and which contribute in so eminent a degree to make England what it is.

The advantages, however, which we thus enjoy are, in by far the greater part, only of comparatively recent acquisition. The Baron Dupin, in the introduction to his work on the "Commercial Power of Great Britain," writing in 1822, remarks, that fifty years before that time, France was generally as far ahead of this country in all that concerns public utility, as we had since got before his own countrymen. Imperfectly supplied with roads as France now is, compared with England, the Baron's statement is probably true if confined even to this particular. If we turn back at least to times somewhat, though not very much, more remote, we find that there were hardly any roads on which travelling could be conveniently performed, except in the immediate vicinity of the capital, and not even always there. In the Appendix to the "Results of Machinery," a passage is quoted from an historical work, according to which it appears that Prince George of Denmark, having, in December, 1703, to make the journey from Windsor to Petworth, was fourteen hours in accomplishing that distance of forty miles in his coach, the last nine miles having taken six hours to get over them. "We did not get out of the coaches," says the narrator, one of the prince's attendants, ("save only when we were overturned, or stuck fast in the mire) till we arrived at our journey's end. * * * We were thrown but once indeed in going, but our coach, which was the leading one, and his highness's body-coach, would have suffered very much, if the nimble boors of Sussex had not frequently poised it, or supported it with their shoulders." In those days, indeed, and long after, the common mode of travelling was on horseback; and in country parts goods were almost universally conveyed on packhorses. We gave, in our 61st Number, a relation extracted from Dr. Cleland's "Statistical Account of Glasgow," of a journey made in this manner by two inhabitants of that city to London, in the year 1739, in which it is stated, that they found no turnpike road till they came to Grantham, in Lincolnshire, 110 miles from the English metropolis. Up to that point they had to make their way along a narrow path raised in the middle of an unmade soft road, into which latter they had to descend whenever they met one of the gangs of packhorses carrying goods, the raised causeway not being broad enough to allow the two parties to pass each other. "We, who, in this age, are accustomed to roll along our hard and even roads at the rate of eight or nine miles an hour," says a writer in the Quarterly Review (xxxi. 356) with much truth, "can hardly imagine the inconveniences which beset our great grandfathers when they had to undertake a journey—forcing their way through deep miry lanes; fording swollen rivers; obliged to halt for days together when the 'waters were out;' and then crawling along at a pace of two or three miles an hour, in constant fear of being set fast in some deep quagmire, of being overturned, breaking down, or swept away by a sudden inundation."

The Romans formed several excellent roads in Britain, as they did in every other country which they subjected to their arms; but the ages of confusion and misery that followed their departure from the island obliterated these, with nearly every other vestige of their domination. For a long period, instead of our roads being improved, they probably continued to grow worse and worse. About the time of the Norman Conquest, the principal streets of London appear to have been little better than ditches or marshes. It is related that in the year 1090, on occasion of a storm of wind blowing down the roof of St. Mary-le-Bow church in Cheapside, four of the rafters, each twenty-six feet long, were pitched so deep into the street, that scarcely four feet of them remained above ground. Holborn was not paved till the beginning of the fifteenth century. In the year 1417, the king, Henry V., ordered two vessels, each of twenty tons burden, to be employed at his expense in bringing stones for this purpose, by reason that the highway in question was so deep and miry, that many perils and hazards were thereby occasioned, both to the king's carriages passing that way, and to those of his subjects. The western end of Holborn, however, appears not to have been paved till 1541; in which year, both it, Gray's Inn-lane, Chancery-lane, and other streets now in the heart of the city, are described as

"very foul, and full of pits and sloughs, very perilous and noisome, as well for the king's subjects on horseback, as on foot, and with carriages."

The first notice which has been discovered of the collection of a toll for the repair of roads in England, occurs in the year 1346, in the reign of Edward III. In that year it was ordered, that tolls should be exacted, for two years to come, from all carriages passing along Holborn, Gray's Inn-lane, and the highway called Charing, "which roads," says the commission, "are, by the frequent passage of carts, wains, and horses, to and from London, become so miry and deep as to be almost impassable."

As for the country roads, little or no attention seems to have been paid to them till towards the middle of the sixteenth century. In the course of the reign of Henry VIII., four statutes connected with this subject were passed; two for altering certain roads in the Weald of Kent, and in Sussex; a third for mending a lane near the city of Chester; and a fourth for the repair of bridges. The first general act for keeping the roads in repair was passed in 1555, in the reign of Mary. It imposed that duty upon the parishes, and was followed by many others to the same effect in the reigns of Elizabeth and James I. The first toll-bar was erected in 1663, on the northern road leading through Hertfordshire, Cambridgeshire, and Huntingdonshire; "which road," says the act, "was then become very bad, by means of the great loads of barley, malt, &c., brought weekly to Ware in waggons and carts, and from thence conveyed by water to London." Three toll-gates were erected, one for each of the above-named counties; and it is said that the people were so prejudiced aga nst the innovation, that they rose in a mob and destroyed them.

Coaches are said to have been first introduced into England in 1580, by the Earl of Arundel; and by the commencement of the next century they had become common in London. They were brought to Edinburgh in the suite of the English ambassador in 1598. The historians of that city tell us, that coaches for the use of the public generally were established there in 1610. Hackney coaches were first introduced in London in 1625.

As yet there was but little intercourse between these two capitals. In London, Scotland and Edinburgh were considered as foreign parts. In 1635 a proclamation was issued by Charles I. to the effect, that, "whereas to this time there hath been no certain intercourse between the kingdoms of England and Scotland, his majesty now commands his postmaster of England for foreign parts to settle a running post or two, to run night and day, between Edinburgh and London." It was a considerable time after the commencement of the last century, before there was more than one despatch of letters in the week from London to Scotland. In the year 1763, the London coach set off from Edinburgh only once in the month, and was from twelve to sixteen days on the road. The vehicle which accomplished this adventurous achievement was at that time the only stage-coach in the northern capital, except two which ran to the neighbouring port of Leith. A journey to or from Edinburgh was in those days a doubtful and hazardous expedition — something like setting out in quest of the North-west Passage. It is said, that in Scotland, when a person determined upon attempting the achievement, he used, with the laudable prudence of that country, to make his will before setting out.

The change that has since taken place is immense. The journey between London and Edinburgh is now performed by the mail-coach, at all seasons and in all weathers, in little more than forty-three hours and a half. The person who undertakes it exposes himself to scarcely any more danger than he does when he walks along the street in which he lives. Even in Scotland a man seldom now thinks of making his will merely because he is about to visit London. These changes, and the countless others of which they are examples or indications, are due to the existence of a good road between the two capitals. This road, more than the compact of the year 1707 is the true Union of the Kingdoms.

Within the last thirty years this Great North Road, as it is commonly called, has been extended to the remotest extremity of the island—to a point still farther beyond Edinburgh (at least by the line taken) than Edinburgh is distant from London. This latter portion especially, and also parts of that extending to the south of Edinburgh, have recently undergone some material alterations and improvements. Those that have been effected within the last three years alone are well fitted to raise the admiration of all who are qualified to appreciate their importance. They afford an evidence which is extremely gratifying of the exertions that continue to be made in order to uphold and extend one of the chief foundations of our national prosperity and greatness. We have been fortunate enough to obtain very complete accounts of the principal of these improvements, in most instances from persons having access to the best sources of information; and abstracts of these we now propose to lay before our readers, accompanied with illustrative wood-cuts, and interspersed with such explanations as may convey a full and correct view of the whole course of this great highway,—the longest continued line of road in the United Kingdom.

Improvements in the North.

So greatly does the northern portion of our island incline or lean over to the west, that Edinburgh, while it is about 320 miles to the north of London, is also above 100 miles to the west of it—although the two capitals stand at about equal distances from the east coast. Edinburgh, on the east coast of Great Britain, is, in fact, rather farther west than Liverpool, which stands on the west coast. What is called the Great North Road from London, therefore, diverges considerably from a line drawn due north. The wide level country which generally prevails as far as to the heart of Yorkshire enables it to pursue up to that point a course nearly perfectly straight. The first formidable obstacle, indeed, which it meets with to prevent it from following the shortest line to the Scottish metropolis is interposed by the Cheviot hills, which form the north-west boundary of Northumberland. These hills, at their northern extremity, approach so close to the sea as to leave only a pass of a few miles broad through which the road at this part of its course can be carried. Hitherto the town of Berwick, which is on the coast, and at a short distance beyond the termination of the Cheviot range, has been assumed as the point which should determine the direction of the first part of the road between the two capitals. This has made the deflection of the line to the west less than it otherwise would have been; for Berwick, although far west of London, is still considerably to the east of Edinburgh.

The direction of the southern portion of this road, then, may be considered as necessarily regulated, not by the relative positions of London and Edinburgh, but of London and Berwick, or another point but a few miles to the westward of the latter town. The route followed by the mail at present, in fact, is very nearly the shortest line between London and Berwick, subject merely to such slight deviations as are required in order to make it touch certain great towns. The length of this portion of the road, which passes through Huntingdon, Stamford, Doncaster, York, Darlington, Durham, and Newcastle, is 342 miles; the whole distance from London to Edinburgh being 399 miles.

The first improvements which it falls within the plan of the present article to notice are those which have been recently made on the northern portion of this line of road between London and Berwick. We shall begin by merely adverting to the magnificent approaches which now lead to the town of Durham, the elevated situation of which formerly rendered it of such difficult access. The new entrances, which have in a great degree overcome the obstacles presented by the nature of the ground, are excellent specimens of engineering skill, and do honour to the local trusts. They would probably, however, have remained unexecuted, but for the stimulus given to these bodies by a Committee of the House of Commons, which had under its consideration the defective state of the communication between London and Edinburgh. We may here also mention, as having originated in the recommendations of the same Committee, the handsome new bridge over the North Tyne at Morpeth, constructed by Mr. Telford, after the model of the bridge of Neuilly near Paris.

But the most important improvements in this quarter, and those to which we would particularly direct attention, are the alterations which have recently been effected, or are in progress of execution, on the portion of the road to Edinburgh immediately beyond Morpeth. Here the Cheviot hills run almost parallel to the coast, to which they at the same time approach so closely, that what we may call their roots stretch across the intervening space in the shape of so many successive elevations, while the hollows between are occupied by rivers more or less considerable, all having a direction at right angles to the line of the road. This extreme inequality of surface has hitherto, as already intimated, forced the road close upon the sea; but even while thus retiring as far as possible from the mountains, it has still not been able to avoid a remarkably steep ridge called Birnside Moor. The gentlemen of Northumberland, however, have at last, aided by the great exertions of Sir John Marjoribanks of Lees, effected the union of several of the local trusts into one, and thereby enabled themselves to raise the sum of £12,000, which they are now in the course of expending in carrying the road through a series of valleys lying farther to the west, in place of this elevated moorland. The whole of this improvement will be completed during the present year; and, although much still remains to be done to make the road what it ought to be in the more immediate vicinity of Morpeth, the alteration effected here will deserve to be accounted one of the most valuable works of public utility which have been recently accomplished in these islands.

The road, following the new direction thus given to it, will now leave Berwick to the right, and, instead of running along the coast, as it does at present, by Dunbar, and thence turning round in a due west direction by Haddington, will proceed by Wooler and Coldstream in very nearly a straight line to Edinburgh. The saving by this route, we believe, will be above ten miles, the distance from Edinburgh to Morpeth being reduced from 104 miles to about 93½. It is only lately, however, that the road by Coldstream, which passes through a very hilly country, has been brought to such a condition as that the mail could travel on it. The exertions of the gentlemen of Berwickshire and Midlothian, by which this important object has been at last accomplished, rather preceded those of the Northumberland trustees to which we have just adverted; their operations having commenced in January, 1828.

From a report now before us, by the clerks of the Berwickshire trust, it appears that the improvements effected on what is called the Greenlaw Turnpike Road embrace the reduction of numerous severe pulls of from one foot in six to one foot in twelve, occurring between Deanburn, the northern extremity of the trust, and Coldstream, to gentle ascents of from one foot in twenty-five to one foot in forty; besides the repair of the bridge over the Blackadder, at the east end of Greenlaw, and of that over the Tweed at the east end of Coldstream. Including £2,100, expended on the Coldstream Bridge, the whole cost of these improvements, up to the 8th of March last, had amounted only to £23,145. Of the adjoining portion of the road in the Edinburgh direction, which is under the care of the trustees of the Dalkeith district, a line of about eight miles, extending from the south-east boundary of the county of Mid Lothian to the north end of Fordel Bank, near Dalkeith, has within the same period been shortened, and the passage on it rendered much more safe and easy by altering the course of the road in some places, by cutting down and banking over some difficult and dangerous passes, and by building several new bridges.

The principal bridges are, the bridge over Cranstown Dean, and the bridge over the Tyne, at the north end of the village of Ford Pathhead, called the Lothian Bridge. Cranstown Dean Bridge is forty-six feet in height, and consists of three semicircular arches of seventeen feet span: the whole building is of ashler; and the piers being only three feet in thickness, the bridge has a very light appearance.

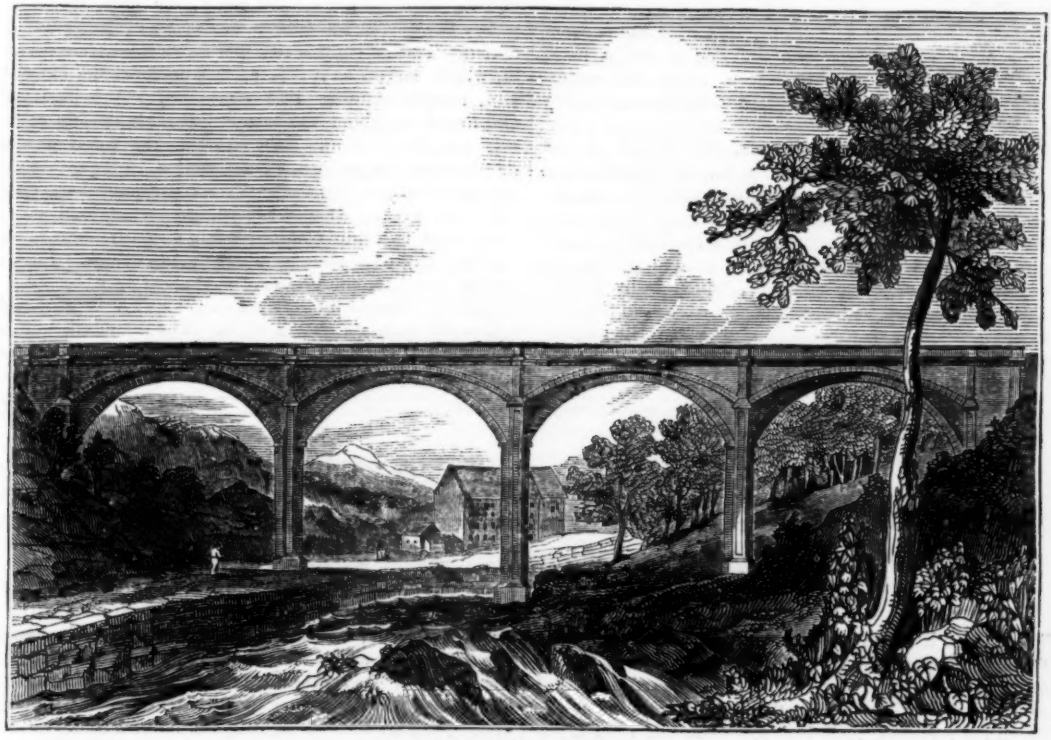
Lothian bridge is eighty-two feet in height, and consists of five semicircular arches of fifty feet span, surmounted by ten segment arches of fifty-four feet span and eight feet of rise. The piers are eight feet thick by twenty-eight feet broad, and hollow in the centre, as are also the abutments.

The whole building is of ashler, thereby presenting a happy combination of durability and lightness, and adding much to the ornament of the adjoining grounds. The embankments at the ends of the bridges are planted up with evergreens.

Of the embankments, that at Cotterburn is of the length of 500 yards, and will contain 200,000 cubical yards of earth. The extreme depth of cutting in the line of the road will be thirty-two feet. Besides the general improvement of the line of road, these operations have opened many fine prospects of the neighbouring beautifully-wooded and highly-cultivated country. The expense has amounted to between £20,000 and £30,000; besides a large sum of money which was previously expended on the improvement of that part of the line which is situated between this district and Edinburgh.

The city of Edinburgh stands within two miles of the great arm of the sea called the Frith of Forth, which, at the part immediately north from the Scottish capital, is about seven or eight miles broad. Steam-boats and other vessels put across this estuary at all hours from Leith, the port of Edinburgh, and from Newhaven, about a mile to the west of that town, both to Burntisland, Pettycur, and Kinghorn, which are directly opposite, and to Kirkaldy, Dysart, Leven, Ely, Pittenweem, and Anstruther, which lie farther to the east. The common passage for travellers to the north is from Newhaven (where there is a chain pier) to Pettycur. As this passage, however, is subject to be occasionally interrupted, (though since the introduction of steam navigation that is a circumstance which has very rarely happened,) the mail, instead of crossing here, proceeds along the coast of the river to Queensferry, about twelve miles farther west, where the channel is contracted to the width of about a mile and a half. But before leaving Edinburgh we cannot help noticing, although not upon any of the great lines of road leading from that capital, the magnificent bridge, called the Dean Bridge, which has lately been thrown across the chasm formed by the river or water of Leith to the north of the city. The reader will find a notice of this structure, which was only finished about the beginning of last year, in the "Companion to the Almanac" for 1832. By permission of the publishers

of the "Encyclopædia Britannica," we present an engraving of it, taken from one of the plates in the new edition of that work. This bridge, which has been erected after a design by Mr. Telford, almost at the sole expense of John Learmouth, Esq., (late Lord Provost,) to whose property it forms a communication, consists, it will be perceived, of two series of four arches each, the one surmounting the other. The span of each of the upper arches is 96 feet; and the road-way passes at the height of more than 120 feet above the level of the water below.



[View of Dean Bridge, Edinburgh.]

From Queensferry the present route of the mail is directly north by Kinross to Perth, from which point, crossing the Tay by a bridge, it takes its way along the northern banks of that river in an eastern direction to Dundee, and from thence to Arbroath on the coast. The common road, however, from Edinburgh to Dundee runs in nearly a straight line from Pettycur through the county of Fife, and across the Frith of Tay, which at Dundee is about two miles in breadth. There is on this passage an excellent steam-boat, of a peculiar construction, the paddles being placed in the middle as if there were two boats joined, and the form being such that it moves equally well with either end foremost. The distance from Edinburgh to Dundee, by this road, is not quite 43 miles, whereas by that which the mail takes, for the sake principally of avoiding the two ferries over the Forth and the Tay, it is not less than 69 miles. From Dundee to Arbroath is 17 miles more, so that the whole distance by this circuitous route from Edinburgh to the latter place is 86 miles, the distance in a straight line being only about 50. In getting from Berwick to Arbroath, again, the mail travels about 143 miles, while a straight line drawn between these two points would not measure 60. The voyage by sea from the one place to the other does not exceed the last-mentioned distance.

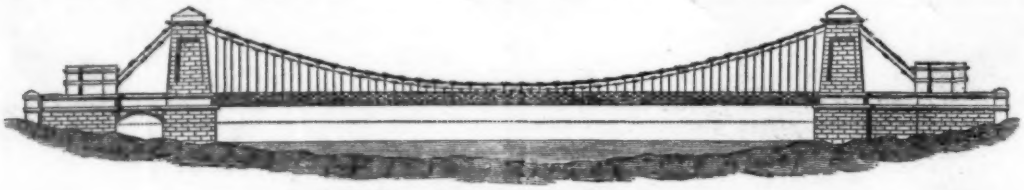
The road between Edinburgh and Montrose, which is twelve miles to the north of Arbroath, has been constructed at a cost of not less than £100,000, reckoning only the outlay since the commencement of the present century; but as only a small portion of this sum has been expended within the last three or four years, the consideration of the improvements which it has effected does not fall within the scope of our present remarks. We pass on, therefore, to notice the bridge which has just been carried over the South Esk at Montrose. This town stands on the north bank of the river called the South Esk, which here falls into the German Ocean; and we cannot better explain its singular situation than by extracting the description given of it in a Report made in 1823 by Mr. Buchanan.

"The river South Esk, at Montrose, is remarkable for its broad, deep, and very rapid stream. But the great width of the river, and the current, deep and rapid beyond example indeed in this country, are not owing to the magnitude of the South Esk river itself, but to the singular manner in which the discharge of its waters into the sea is here combined with the action of the tides and the configuration of the adjacent ground.

"The town stands on a gently-rising ground, in one of those low sandy flats which occur so frequently on the shores of the German Ocean, and which, from their slight elevation above the sea level, and other circumstances, appear to have been once overflowed by the water. It has the German Ocean on the east, at the distance of about half a mile, and to the west is a tract of low and level sands, above four square miles in extent and nine miles in circumference, through which the South Esk winds its way to the sea, passing close to the town on its south side. These sands lie below the level of high water, and above the level of low water; and the river opening a communication with the sea, it necessarily happens, that every rising tide rushes up the channel of the river, and inundates the whole of this sandy flat to the west of the town, which is again left uncovered by the reflux of the tide. The channel through which this great body of water is alternately poured in and discharged, is suddenly contracted, at the south end of the

town, to the breadth of 700 feet at high water, and 400 feet at low spring tides; and in consequence of this, the stream rushes in or out with great violence, according as the tide is either flowing or ebbing. This low land, over which, at each return of the tide, are spread the waters of the ocean, after they have made their way through the narrow channel of the South Esk, is called the Basin; which forms a striking object in the scenery of the place, appearing, when the tide is full, a large and beautiful lake, and in a few hours afterwards, when the waters have retired, a desolate and sandy marsh."

Between the basin and the sea, the river is at one place divided into two channels, by a small island called the Inch; but the two streams again unite into one before they arrive at the sea. About thirty years ago, when the road from Edinburgh to Aberdeen was first constructed, a wooden bridge was erected across the most northern of these channels, which is by far the broadest; the other being crossed by a stone bridge of one arch, which is so narrow that, says Mr. Buchanan's Report, "it has contracted the channel of the river to at least one-fourth of its original breadth." At the same time the channel of the northern stream had been greatly contracted by the faulty construction of its wooden bridge. The effect of this unnatural confinement of so violent and rapid a stream has been to deepen the channel on the northern side, not less than five or six feet in many parts; so that the original bottom having been carried away, the foundations on which the piers rested were in danger of being undermined. To prevent this result wooden piles were driven in, which served as a sort of wall to repel the current. But, notwithstanding this expedient, the bridge was still found to labour under the incurable defects of its original construction. In particular the wood was so damaged by the ravages of sea worms, of the genus designated *Oniscus*, that the expense of keeping it in repair was very great. It was accordingly determined a few years ago to remove this wooden structure altogether, and to supply its place by a suspension bridge. Such a bridge has been accordingly erected, after a design by Captain Samuel Brown, of the Royal Navy. We present below an accurate sketch of it. The foundation-stone was laid on the 18th September, 1828, and the whole was completed by the 12th December, 1829.

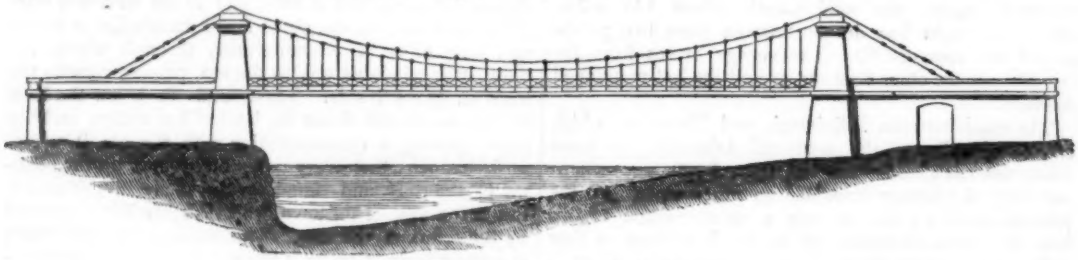


[Bridge over the South Esk at Montrose.]

The distance between the towers at the two extremities of this bridge, measured from the centre of each, is 432 feet. The height of each tower is seventy-one feet; namely, twenty-three feet and a half from the foundation to the roadway, forty-four feet from the roadway to the top of the cornice, and three feet and a half forming the entablature. The breadth of each tower at the termination of the cutwaters is forty feet and a half, and thirty-nine and a half at the roading. The archway by which each is perforated, is sixteen feet in width, by eighteen in height. The four counter-abutments for securing the chains are respectively 115 feet distant from the towers, (reckoning from the centre of the tower to the face of the farthest wall of the chambers,) and consist each of an arched chamber, a strong counter-fort or abutment, a tunnel, and lying spandrel arch. The width of the bridge is twenty-six feet within the suspending rods. The bars of which the main chains consist measure eight feet ten inches from centre to centre of the bolt-holes, five inches broad between the shoulders, and one inch thick throughout. All the main links or bars are of the same thickness, except those in the towers, which are a sixteenth of an inch thicker, and of length to suit the curve of the cast iron saddles. Each main suspending chain, of which there are two on each side of the bridge, one over the other, placed one foot apart, consists of four lines of chain bars. The joints of the upper main chains are over the middle of the long bar in the lower chain; and the suspending rods, which support the beams on which the roadway is laid, are five feet distant from each other. The chains are of wrought cable iron; the beams are of cast iron, formed with open spaces, twenty-six feet eight inches long, ten inches deep at the neck of the tenons, and one inch thick in every part between the flanges. The whole cost has been a little above £20,000.

To this account we have only to add, that the centre of the arch of the stone bridge which crosses the southern stream has also been taken down, and a revolving drawbridge erected in its stead, by which vessels are allowed to pass and repass. The communication across the South Esk, at Montrose, therefore, may now be considered to be as perfect as it can be rendered or desired.

From Montrose the road follows the line of the coast by Bervie and Stonehaven to Aberdeen, a distance of thirty-seven miles. The situation of New Aberdeen is extremely similar to that of Montrose, standing, as it does, on the north side of the large and rapid river Dee. Until lately, the only bridge across this river was the magnificent old bridge erected by Bishop Elphinstone in the early part of the sixteenth century. Within the last three years, however, a suspension-bridge has been erected between the town, and a road made, at great expense, to communicate with the old one. Of this structure the following is a representation.

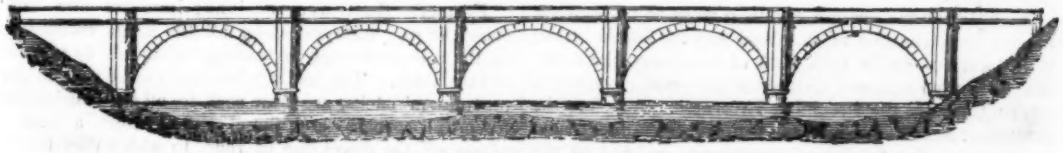


[Bridge over the Dee at Aberdeen.]

In this bridge the width between the stone piers is 200 feet; the breadth of the roadway is 22 feet; and its height above high water is 18 feet. It is within the recollection of many persons now alive, that the whole of the land at present in cultivation around Aberdeen was one brown heathery moor. Such is still the case with the whole district through which the above-mentioned new road has just been completed; but from this operation we may probably date the commencement of a course of improvements which will ere long transform this hitherto bleak and sterile tract into cultivated and productive fields. And here, while speaking of New Aberdeen, we cannot help adverting to the small expense, both of money and of time, with which, thanks to steam navigation, a person residing even at so distant a point as London may now accomplish a visit to this handsome northern city, remarkable for its rapid increase, the industry of its inhabitants, and the fine granite buildings of which it is entirely constructed. The voyage by sea is very little, if anything, longer than to Edinburgh, and is usually performed by the steam-boats in little more than fifty hours.

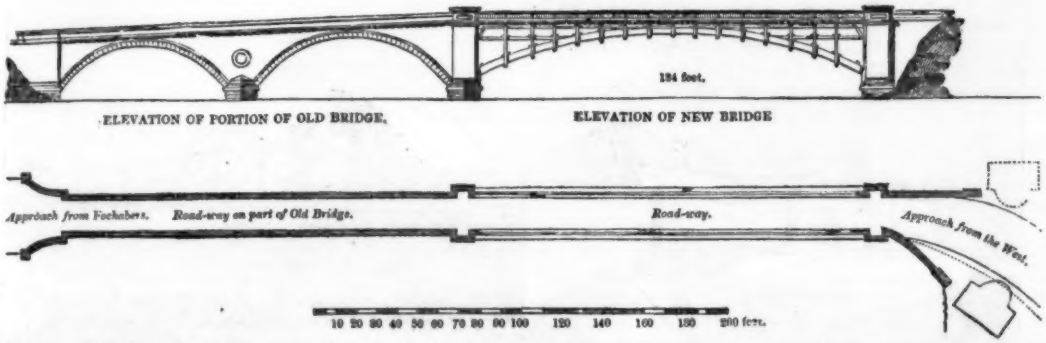
As New Aberdeen is situated on the north side of the Dee, so Old Aberdeen stands on the south side of the Don. The Don, until within these few years, was crossed at Old Aberdeen by a very ancient bridge, called the *Brig of Balgownie*. We refer the reader to an interesting passage in Sir Thomas Dick Lauder's volume, entitled "An Account of the Great Floods of August, 1829, in the Province of Moray and adjoining Districts," for some curious particulars regarding this structure.

The new bridge of Don, which was built by Mr. Gibb, after a design by Mr. Telford, is about 520 feet in length, and consists of five arches, each of seventy-five feet span, and twenty-four feet rise. The total expense of the erection was £14,000. The effect of this improvement is to shorten the road by about half a mile, and to avoid three steep hills over which it was formerly carried. This structure, although in an unfinished state when the great flood of 1829 occurred, escaped on that occasion without injury. It was completed towards the end of the following year. We give a cut of this bridge.



[Bridge over the Don at Aberdeen.]

At Aberdeen the mail road leaves the coast, and proceeds across the country in nearly a straight line by Inverury, Huntley, Keith, and Fochabers, to Elgin, the county-town of Morayshire. The whole distance from Aberdeen to Elgin is sixty-seven miles. The road is throughout excellent; and, notwithstanding that it passes over a great deal of hilly country, is so artfully conducted, that hardly a single heavy pull is encountered the whole way. Immediately beyond Fochabers it is met by the impetuous and formidable river Spey, forming the boundary of the province of Moray, which, notwithstanding its northern situation, is one of the fairest portions of the island, and one of those in which vegetation is earliest. It used, however, to be in a manner separated and cut off from the rest of the country by this dangerous mountain-torrent, until about twenty-five years ago, when a bridge was first built across it at Fochabers. It consisted of four arches, of which two were of ninety-five and two of seventy-five feet span each, the total length of water-way being 340 feet. But this bridge, during the floods of August, 1829, which destroyed or damaged nearly one hundred others, had the two arches next the left bank carried away, of which Sir Thomas Dick Lauder has given a striking account. This bridge has been since repaired, as represented below.


134 feet.
ELEVATION OF PORTION OF OLD BRIDGE.
ELEVATION OF NEW BRIDGE
Approach from Fochabers.
Road-way on part of Old Bridge.
Road-way.
Approach from the West.
10 20 30 40 50 60 70 80 90 100 120 140 160 180 200 feet.

Various bridges over the river Findhorn, which bounds Morayshire to the west, and over the stream of the Lossie, on which the town of Elgin stands, were swept away on the same occasion; so that the country was at once cut off from all communication with surrounding parts. Active measures, however, have since been taken to repair the ruin produced by this visitation, and new bridges have already been erected in the line of the great road over all the three rivers.

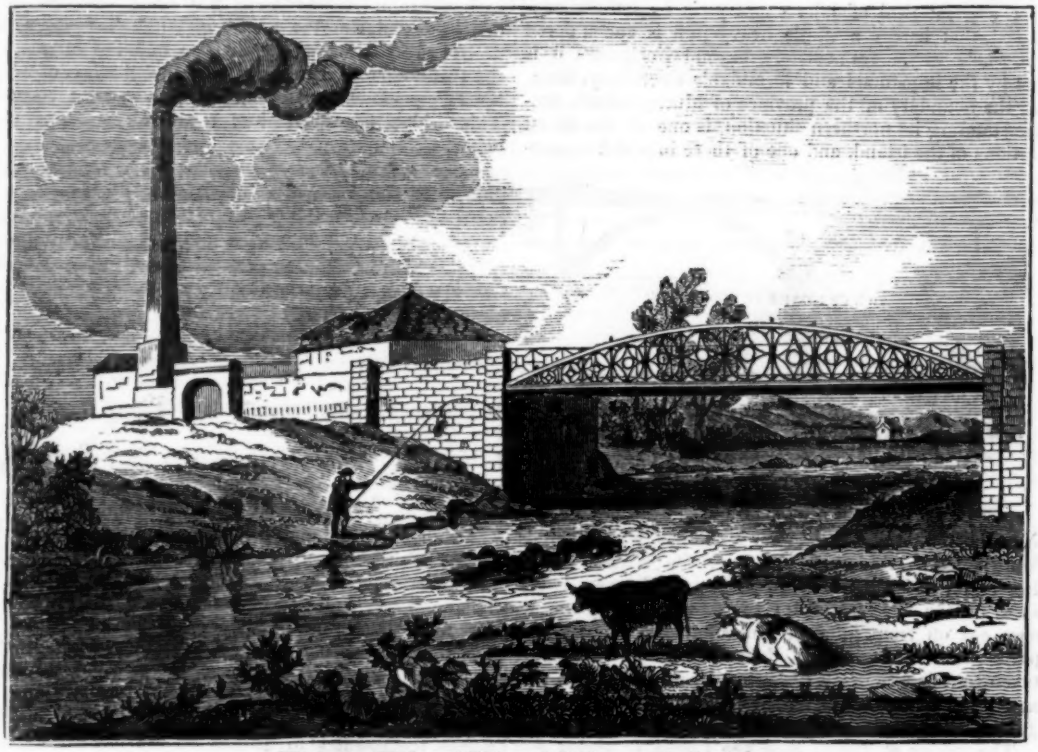
The bridge at Elgin, over the Lossie, of eighty feet span, is partly of cast metal and partly of timber. We give a representation of this bridge in the next page, from a lithographic print executed at Elgin. That over the Findhorn, which is a suspension bridge, is represented at the beginning of the article.

From Elgin the mail proceeds along the coast of the Moray Frith to Inverness, and from thence westward to the termination of that estuary, when it crosses the Beauly Water, and ascends northwards to Dingwall, on the Frith of Cromarty. Pursuing for some time the direction of the northern coast of that Frith, it then arrives at Tain on the Dornoch Frith, which it crosses by Meikle Ferry; after which the road runs along the coast for seventy miles, till it leaves it at Wick, and cuts across the country to Thurso on the Northern Ocean. This is the farthest point to which the London mail proceeds. Thurso, by the road which has been described, is 783 miles distant from London; and the journey is now accomplished by the mail, all stoppages included, in four days and fifty minutes.

The portion of the road which has just been described from the Beauly Water to Thurso has been constructed and is maintained in repair by the commissioners appointed under the act of parliament for superintending Highland roads and bridges. The works conducted by the parliamentary commissioners from the year 1803, when they commenced their operations, have done more to advance the civilization of the Highlands than all the other attempts of government for that purpose in the course of the preceding century. Speaking of what had been done up to 1817, Mr. Telford, the engineer, asserts, in a statement which will be found quoted at greater length in the "Results of Machinery," chap. vii., that the money then expended "had been the means of advancing the country at least one hundred years." The report made by the commissioners in 1828 (the fourteenth) contains an interesting communication, addressed to the late Lord Colchester, by Mr. Joseph Mitchell, on the improved state of the Highlands since the commencement of the works executed by the commissioners; with an abstract of a few of the statements presented in report which we may fitly conclude the present paper.

So little communication was then wont to be between the northern counties of Scotland and the south, owing to the want of roads, that, until of late years, the counties of Sutherland and Caithness were not required to return jurors to the circuits at Inverness. "Before the commencement of the present century, no public coach, or other regular vehicle of conveyance, existed in the Highlands. It was not till 1806 and 1811 that coaches were regularly established in these directions, being the first that ran on roads in the Highlands. Since the completion of the parliamentary works, several others have successively commenced; and during the summer of last year, no less than seven different stage-coaches passed daily to and from Inverness, making forty-four coaches arriving at, and the same number departing from, that town in the course of every week. * * * Post-chaises, and other modes of travelling, have, during the same period, increased proportionably; and, instead of five post-chaises, which was the number kept in the town of Inverness about the year 1803, there are now upwards of a dozen, besides two establishments for the hire of gigs and riding horses. * * * The number of private carriages in Inverness and its vicinity has likewise increased remarkably during the last twenty-five years, and no less than 160 coaches may now be seen attending the Inverness yearly races; whereas, at the commencement of that period, the whole extent of the Highlands could scarcely produce a dozen; and at no very distant date previously, a four-wheeled carriage was an object of wonder and veneration to the inhabitants. In 1715, the first coach or chariot seen in Inverness is said to have been brought by the Earl of Seaforth. In 1760, the first post chaise was brought to Inverness, and was for a considerable time the only four-wheeled carriage in the district. There are at present four manufactories for carriages at Inverness."

Formerly there were no inns; inns are now built, except in one instance, along all the roads constructed by the commissioners, extending in length to upwards of 900 miles. The mails, which used to be carried only on runners' backs, are now sent to all the considerable towns in coaches, and three or four times a week to places off the direct line of road, to which they used to come only once. Finally, Agriculture has received a prodigious impulse from these improvements; the value of property has been greatly increased; trade has been promoted; and the general condition of even the poorest of the inhabitants has been ameliorated by numerous accommodations and comforts which were formerly entirely out of their reach.



[Elgin Gas Works and Bishopmill Bridge, over the Lossie.]

*** The Office of the Society for the Diffusion of Useful Knowledge is at 59, Lincoln's-Inn Fields.

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